

Common Course Outline
MATH 135
Applied Algebra and Trigonometry
3 Credits

Community College of Baltimore County

Description

MATH 135 – 3 credits - Applied Algebra and Trigonometry covers a wide range of real world applications of college-level algebraic and trigonometric topics, such as linear and quadratic equations, right-triangle trigonometry and vectors, and exponents and logarithms; students develop problem-solving skills relevant to their disciplines. This course is primarily for students in certain technically-oriented disciplines.

Note: This course is required for admission to the Radiation Therapy program and is a required prerequisite to the Radiography (X-Ray Technology) program. This course is a General Education requirement for A.A.S. degrees in the following programs of study: Computer-Aided Design for Architecture and Engineering; Construction Management; Construction Craft Professional; Geospatial Applications; Heating, Ventilation and Air Conditioning (HVAC) & Energy Technology; Medical Laboratory Technology; Occupational Safety and Health Technology, and Veterinary Technology.

Either MATH 135 (Applied Algebra and Trig) or MATH 165 (Precalculus) is required as the Math General Education course for A.A.S. degrees in Engineering Technology and Survey Technology.

3 Credits

Prerequisites: MATH 083 or sufficient math placement score and ACLT 052 or ACLT 053.

Overall Course Objectives

Upon successful completion of this course students will be able to:

1. define various algebraic functions;
2. interpret and translate concepts of algebra and trigonometry using appropriate terminology ;
3. solve linear and quadratic equations in applied settings;
4. solve problems involving trigonometry, vectors, exponents, and logarithms;
5. describe mathematical information in table, graphical, formulaic, and written formats;
6. demonstrate a working knowledge of mathematical applications relevant to such fields of study as Drafting and Allied Health and to such programs as Radiation Therapy, Ultrasound, CADD, Automotive Technology, and Medical Laboratory Technology;
7. examine data and select the appropriate mathematical functions that describe the data accurately and ethically;
8. select the appropriate mathematical theories, dependent upon the nature of the specific data,

- to make informed conclusions;
9. choose appropriate technology for the solution of mathematical problems;
 10. evaluate efficient and inefficient methods for problem solving;
 11. find, evaluate, use and cite appropriate academic sources to research mathematical and related topics;
 12. construct solutions to real world problems using problem solving methods individually and in groups;
 13. apply algebraic and/or trigonometric concepts to a global or international context, and
 14. articulate solutions to mathematical problems.

Major Topics

I. Review

- A. Scientific notation
- B. Ratio and proportion
- C. Formula evaluation
- D. Rewriting application formulas in terms of any variable
- E. Evaluating application formulas for a given variable
- F. Laws of exponents
- G. Linear equations using slope and intercepts

II. Basic algebraic operations

- A. Significant digits
- B. Converting measurements from one unit to another
- C. Solving word problems using direct and inverse variation

III. Functions and graphs

- A. Linear functions, quadratic functions, and tables of data
- B. Representations of a function (e.g., table, graph, formula)

IV. Solving equations

- A. 2x2 systems of linear equations and applications
- B. Use Cramer's rule/technology OR determinants/technology to solve 3x3 systems of linear equations
- C. Solving quadratic equations with the quadratic formula

V. Trigonometric functions

- A. Six trigonometric functions of any angle given in degrees or radians
- B. Solving right triangles and word problem applications
- C. Linear velocity, arc length, and sector area application word problems
- D. Law of sines and cosines and solving application word problems
- E. Vectors (algebraic and geometric) and application word problems

VI. Exponential and logarithmic functions

- A. Exponential function and exponential word problems (e.g., growth and decay)
- B. Logarithmic (common and natural) functions
- C. Properties of logarithms and solving word problems
- D. Global and social topics evaluated through exponential functions

Course Requirements

Grading procedures will be determined by the individual faculty member but will include the following:

Grading/exams:

There will be multiple opportunities for the instructor to assess student progress in the course through class work, group work, oral presentations, and/or homework.

1. At least one project will be given and individual faculty will notify students of other projects that are assigned. These may include individual work, group work, and/or oral presentation of homework solutions. Students are required to utilize appropriate academic resources. Multiple assignments will infuse CCBC General Education Program objectives; at least one assignment worth a minimum 10% of the total course grade will allow students to demonstrate at least 5 of the 7 General Education Program outcomes.
2. Exams: At least two written examinations will be given. Individual faculty will notify students of testing procedures.
3. Comprehensive Final Exam: The course will also include a comprehensive final exam, which may include a final project.

Other Course Information

This course is an approved General Education course in the Mathematics category. Please refer to the current CCBC Catalog for General Education course criteria and outcomes.

Date revised: 5/15/19